Course Description

Prerequisites for Undergraduates: COSC 1342 and COSC 1343. Creating value from business data by converting it into meaningful and useful information for business decision making by using current industry business intelligence (BI) and business analytics (BA) tools and technologies.

Class Time

Tues/Thur 11:00am – 12:20pm COB 211

Instructor Information

Dr. Robert P. Schumaker
Professor, Computer Science Dept.
rschumaker@uttyler.edu

Office Hours

DM through Slack (preferred), Zoom, email

If your inquiry is grade-related, please make a Zoom or physical appointment

No appointments needed for Tuesdays and Thursdays 12:30pm – 2:00pm in COB 315.05

Textbook Information

Data Mining and Business Analytics with R (Ledolter)
ISBN: 978-1-118-44714-7

Course Objective

- Identify the appropriate analytical tool based on the problem type and characteristics
- Properly conduct a collection and analysis of big-data
- Relate the tools learned to appropriate classes of problems
- Analyze a variety of business datasets for non-trivial patterns
- Predict future trends based on historical data
- Interpret results and appropriately explain them to business managers

Computer Account Access

Students will need a Patriot account and password for computer access. This information can be found at `https://www.uttyler.edu/ccs`

Course Documents and Slides

This class will use Canvas for course documents, slides, quizzes and other class-related materials. Students are encouraged to check the website frequently during the course of the semester to keep up to date about course activity.

Course Grading

Course evaluation will be based on the following:

COSC 4347 (Undergraduate):

Homeworks	20
Midterm I	20
Midterm II	20
Final Exam	20
Class Participation	10
Lifelong Learning	10
Total Points	100

COSC 5347 (Graduate):

Homeworks	20
Midterm I	20
Midterm II	20
Final Exam	20
Class Participation	10
Semester Project	10
Total Points	100

Grading Scale

A 85.0 points or more
B 70.0 to 84.999 points
C 55.0 to 69.999 points
D 40.0 to 54.999 points
F 39.999 points or less

Course Policies

1. Homeworks – Various homeworks will be assigned this semester. Each homework will prepare the student in exercising their analytical skills and demonstrate material mastery.

2. Exams – Three exams including a comprehensive final will be administered covering all material disseminated through the assigned readings as well as what was discussed in class. Exams are designed to measure the student's knowledge of the material as well as their ability to use these skills in an efficient manner. Examinations may consist of multiple choice questions or application problems.

3. Class Participation – Class Participation points will be scored by the quantity of quality discussion a student contributes regarding relevant technology-related articles. The maximum points that can be earned is ten.

4. Lifelong Learning – It is imperative for successful individuals to continue learning throughout their lifetime. Professional organizations are a wonderful opportunity to reinvent, retool and build connections with industry leaders. Students that attend a professional technology organization meeting (and email proof of attendance) will receive credit. Upcoming meetings and events can be found on Canvas. Online webinars will be accepted.

5. Make-up exams will be granted at the discretion of the instructor. Make-ups will be given only under extremely unusual circumstances, will be different from exams given during the regular class time and may be penalized up to 50% of the grade. *Permission for a makeup exam must be obtained **PRIOR** to the regular exam and must include written documentation of the student's absence.*

6. Missed Classes, Tests/Quizzes and Assignments – Students who miss class are responsible for getting missed materials and lecture information on their own time from their peers. Any tests/quizzes and/or assignments due during the student's documented absence will be due by 5pm of the day of their return with no penalty.

7. Classroom Lab Rules
   - Please do not surf the Web during class unless instructed to access the Internet
   - Do not access inappropriate Web sites during class. This will lead to dismissal from the class
   - Please do not work on other computer assignments during class
   - Please do not talk to your neighbor during class
   - Please do not bring food or an uncovered drink into the computer classroom lab
   - Please do not order food to be delivered to the classroom
   - Do not use your phone during class
   - Do not unplug, rearrange, or attempt to fix any classroom computer equipment

Tentative Course Schedule and Assignments

Date	Concept	Assignments	Quizzes
Jan 10	Introduction to Business Intelligence	Arnyg Analytical	
Jan 12	A Data Science Overview	Learning Quizzes I & II	
Jan 17	Basic Statistics Overview	Patterns and Me	
Jan 19	Using Excel for Statistics		
Jan 24	Introduction to R	RBN Art	Chapter 1, 2
Jan 26	Linear Regression		Chapter 3
Jan 31	Polynomial and Multiple Regression	R Basics	Chapter 4
Feb 2	Time-Series Analysis	Multiple Regression	
Feb 7	Measures of Correlation	Stock Smoothing	
Feb 9	Analysis of Variance (ANOVA)		
Feb 14	Clean and Analyze Data	Midterm I	
Feb 16	Data Visualization		
Feb 21	Visualization in R		
Feb 23	Optimization and Linear Programming		
Feb 28	LP Exercises		
Mar 2	LP Exercises	Linear Programming	
Mar 7	No Classes - Spring Break		
Mar 9	No Classes - Spring Break		
Mar 14	Logistic Regression and Binary Classification		Chapter 7, 8
Mar 16	Introduction to Machine Learning	Midterm II	
Mar 21	Clustering and kNN		Chapter 9, 15
Mar 23	Decision Trees		Chapter 13
Mar 28	Naive Bayes		Chapter 10
Mar 30	Genetic Algorithms		
Apr 4	Neural Networks		
Apr 6	Support Vector Machines		
Apr 11	Machine Learning Exercises		
Apr 13	Text Analytics		Chapter 19
Apr 18	R Shiny		
Apr 20	R Shiny and Dashboards		